

Abstract

An electrochemical system adapted to operate between a fuel cell mode, an electrolysis mode and a mode alternating between an electrolysis mode and a fuel cell mode, also referred to as an energy storage mode, operating on a fuel gas mixture and an oxygen-containing gas mixture, and having modified fuel diffusion layers and oxygen diffusion layers. The tapered fuel diffusion layers are progressively thicker from its outermost edge to its innermost edge. The tapered oxygen diffusion layer is progressively thicker from its innermost edge to its outermost edge.